Listing of Claims:

1.(Previously Amended) A method for controlling SO_3 in a combustion process of a sulfur-containing fuel, the method comprising:

providing a combustion system having a first stage and a second stage, a mass flow, a volumetric utilization, a pressure, a density, a given temperature, a stoichiometric ratio, a local fuel flow, a local air flow, and, optionally, a micro-stage;

partially combusting the fuel in the first stage to create a reducing environment;

actively adjusting the reducing environment using at least two adjustments chosen from increasing the distance between the first stage and the second stage, increasing mixing within the first stage by macro-staging, reducing the mass flow, increasing the volumetric utilization, increasing the pressure, increasing the density, increasing the temperature, decreasing the stoichiometric ratio, increasing the local fuel flow, decreasing the local air flow, and decreasing micro-stage mixing, wherein by the adjusting SO_3 is reduced to SO_2 to effectuate an overall decrease in SO_3 concentration to less than about 15 ppm; and

combusting the remainder of the fuel and combustion intermediates in a second stage with oxidizing environment; thereby controlling the levels of SO_3 in the flue gases.

2. (Previously Amended) The method of claim 1, wherein the adjusting includes micro-staging the first stage fuel combustion.

3.(Original) The method of claim 2, wherein the micro-staging is provided through the use of low-NOx burners.

4.(Previously Amended) The method of claim 1, wherein the adjusting includes macro-staging the first stage of fuel combustion.

5.(Original) The method of claim 4, wherein the macro-staging is provided through the use of over-fired air.

6.(Previously Amended) The method of claim 1, wherein the adjusting includes a combination of micro-staging and macro-staging.

7.(Original) The method of claim 6, wherein the micro-staging is provided by low-NOx burners and the macro-staging is provided by over-fired air.

8.(Original) The method of claim 1, wherein the fuel is coal.

9.(Previously Amended) A combustion furnace having a first stage and a second stage, a mass flow, a volumetric utilization, a pressure, a density, a given temperature, a stoichiometric ratio, a local fuel flow, a local air flow, and, optionally, a micro-stage, the furnace operated with a method for controlling SO_3 in a combustion process of a sulfur-containing fuel, the method steps comprising:

partially combusting the fuel to create a reducing environment;

actively adjusting the reducing environment using at least two adjustments chosen from increasing the distance between the first stage and the second stage, increasing mixing within the first stage by macro-staging, reducing the mass flow, increasing the volumetric utilization, increasing the pressure, increasing the density, increasing the temperature, decreasing the stoichiometric ratio, increasing the local fuel flow, decreasing the local air flow, and decreasing micro-stage mixing, wherein by the adjusting SO_3 is reduced to SO_2 to effectuate an overall decrease in SO_3 concentration; and

combusting the remainder of the fuel in an oxidizing environment; thereby reducing the conversion of levels of SO_3 in the flue gases.

10.(Previously Amended) The method of claim 9, wherein the adjusting includes micro-staging.

11.(Original) The method of claim 10, wherein the micro-staging is provided through the use of low-NOx burners.

12.(Previously Amended) The method of claim 9, wherein the adjusting includes macro-staging.

13.(Original) The method of claim 12, wherein the macro-staging is provided through the use of over-fired air.

14.(Previously Amended) The method of claim 9, wherein the adjusting includes a combination of micro-staging and macro-staging.

15.(Original) The method of claim 14, wherein the micro-staging is provided by low-NOx burners and the macro-staging is provided by over-fired air.

16.(Original) The method of claim 9, wherein the fuel is coal.

17.(Previously Amended) A method for controlling SO_3 concentrations in a combustion process of a sulfur-containing fuel, the method steps comprising:

providing a combustion system having a first stage and a second stage, a mass flow, a volumetric utilization, a pressure, a density, a given temperature, a stoichiometric ratio, a local fuel flow, a local air flow, and, optionally, a micro-stage;

partially combusting the fuel in a first stage to create a reducing environment;

actively adjusting the reducing environment using at least two adjustments chosen from increasing the distance between the first stage and the second stage, increasing mixing within the first stage using macro-staging, reducing the mass flow, increasing the volumetric utilization, increasing the pressure,

increasing the density, increasing the temperature, decreasing the stoichiometric ratio, increasing the local fuel flow, decreasing the local air flow, and decreasing micro-stage mixing, wherein by the adjusting SO_3 is reduced to SO_2; and

combusting the remainder of the fuel and combustion intermediates in a second stage with oxidizing environment; thereby controlling the levels of SO_3 in the flue gases.

18.(Previously Amended) The method of claim 17, wherein adjusting includes micro-staging the first stage fuel combustion.

19.(Original) The method of claim 18, wherein the micro-staging is provided through the use of low-NOx burners.

20.(Previously Amended) The method of claim 17, wherein adjusting includes macro-staging the first stage of fuel combustion.

21.(Original) The method of claim 20, wherein the macro-staging is provided through the use of over-fired air.

22.(Previously Presented) The method of claim 17, including a combination of micro-staging and macro-staging to adjust.

23.(Original) The method of claim 22, wherein the micro-staging is provided by low-NOx burners and the macro-staging is provided by over-fired air.

24.(Original) The method of claim 17, wherein the fuel is coal.